FCC TEST REPORT

ZHENGZHOU YSAIR TECHNOLOGY CO., LTD

Queue Wireless Calling System

Test Model: T112

Prepared for	:	ZHENGZHOU YSAIR TECHNOLOGY CO., LTD
Address	:	ROOM 709, SANJIANG BUILDING, NO.170 NANYANG ROAD, HUIJI DISTRICT, ZHENGZHOU, HENAN PROVINCE, CHINA
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample	:	November 22, 2021
Number of tested samples	:	2
Serial number	:	Prototype
Date of Test	:	November 22, 2021 ~ November 26, 2021
Date of Report	:	December 01, 2021

FCC TEST REPORT
FCC 47 CFR Part 15 Subpart B, Class B, ANSI C63.4 -2014

Report Reference No.	**: LCS211119029AE**
Date Of Issue.....	: December 01, 2021
Testing Laboratory Name.....	**: Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address.....	: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure....	: Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name.....	**: ZHENGZHOU YSAIR TECHNOLOGY CO., LTD**
Address.....	: ROOM 709, SANJIANG BUILDING, NO.170 NANYANG ROAD, HUIJI DISTRICT, ZHENGZHOU, HENAN PROVINCE, CHINA
Test Specification	
Standard.....	: FCC 47 CFR Part 15 Subpart B, Class B, ANSI C63.4 -2014
Test Report Form No.....	: LCSEMC-1.0
TRF Originator.....	: Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF.....	: Dated 2011-03

Test Item Description.....	**: Queue Wireless Calling System**
Test Model	: T112
Trade Mark.....	: RETEKESS
Ratings.....	: TX:Input: DC 5V, 6A For AC Adapter Input: AC 100-240V, 50/60Hz, 2.0A Adapter Output: DC 5V, 6A RX:DC 3.7V by Rechargeable Li-ion Battery, 400mAh
Result	**: Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Kevin Huang	Jin Wang	Gavin Liang
Kevin Huang/ Administrator	Jin Wang/ Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS211119029AE	December 01, 2021 Date of issue

Test Model	: T112
EUT.....	: Queue Wireless Calling System
Applicant.....	**: ZHENGZHOU YSAIR TECHNOLOGY CO., LTD**
Address.....	: ROOM 709, SANJIANG BUILDING, NO.170 NANYANG ROAD, HUIJI DISTRICT, ZHENGZHOU, HENAN PROVINCE, CHINA
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: ZHENGZHOU YSAIR TECHNOLOGY CO., LTD**
Address.....	: ROOM 709, SANJIANG BUILDING, NO.170 NANYANG ROAD, HUIJI DISTRICT, ZHENGZHOU, HENAN PROVINCE, CHINA
Telephone.....	: /
Fax.....	: /
Factory.....	: **ZHENGZHOU YSAIR TECHNOLOGY CO., LTD**
Address.....	: ROOM 709, SANJIANG BUILDING, NO.170 NANYANG ROAD, HUIJI DISTRICT, ZHENGZHOU, HENAN PROVINCE, CHINA
Telephone.....	: /
Fax.....	: /

Test Result according to the standards on page 6: **Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
000	December 01, 2021	Initial Issue	Gavin Liang

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1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC 47 CFR Part 15 Subpart B, Class B, ANSI C63.4 -2014	Class B	PASS
Radiated disturbance	FCC 47 CFR Part 15 Subpart B, Class B, ANSI C63.4 -2014	Class B	PASS
N/A is an abbreviation for Not Applicable.			

Test mode:		
Mode 1	Normal Operation	Record

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : Queue Wireless Calling System

Trade Mark : RETEKESS

Test Model : T112

Power Supply : TX:Input: DC 5V, 6A
For AC Adapter Input: AC 100-240V, 50/60Hz, 2.0A
Adapter Output: DC 5V, 6A
RX:DC 3.7V by Rechargeable Li-ion Battery, 400mAh

Highest internal frequency (Fx) : Fx < 1 GHz

Highest internal frequency (Fx)	Highest measured frequency
Fx ≤ 108 MHz	1 GHz
108 MHz < Fx ≤ 500 MHz	2 GHz
500 MHz < Fx ≤ 1 GHz	5 GHz
Fx > 1 GHz	5 × Fx up to a maximum of 6 GHz
NOTE 1 For FM and TV broadcast receivers, Fx is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies. Where Fx is unknown, the radiated emission measurements shall be performed up to 6 GHz.	

2.2. Support Equipment List

Manufacturer	Description	Model	Serial Number	Certificate
Shenzhen Weida Source Technology Co., LTD	AC/DC ADAPTER	WDY-05006000	--	FCC

2.3 External I/O Cable

I/O Port Description	Quantity	Cable
Power Port	1	N/A

2.4. Description of Test Facility

Site Description

EMC Lab. : NVLAP Accreditation Code is 600167-0.
FCC Designation Number is CN5024.
CAB identifier is CN0071.
CNAS Registration Number is L4595.

2.4. Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.5. Measurement Uncertainty

Test	Parameters	Expanded Uncertainty (Ulab)	Expanded Uncertainty (Ucispr)
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB

（1）Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

（2）The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

3. TEST RESULTS

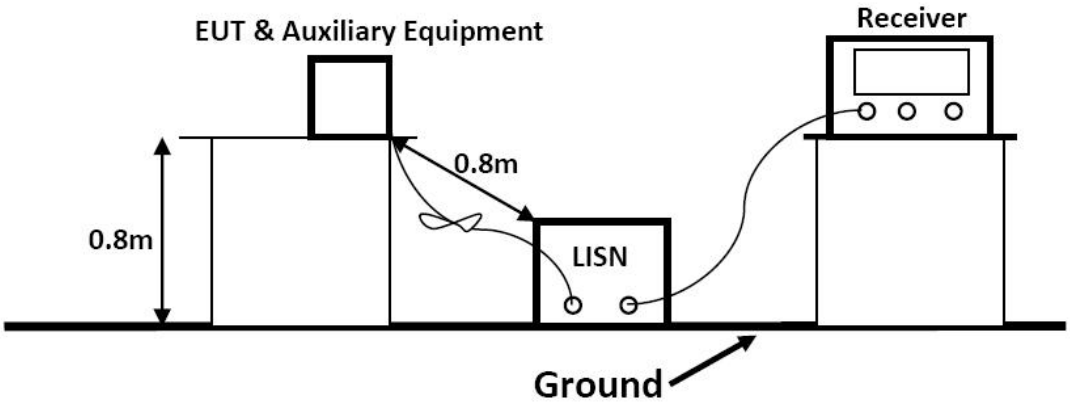
3.1. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	Farad	EZ	/	N/A	N/A
2	EMI Test Receiver	R&S	ESR3	102311	2021-03-16	2022-03-15
3	Artificial Mains	R&S	ENV216	101288	2021-06-21	2022-06-20
4	10dB Attenuator	SCHWARZBECK	MTS-IMP-136	261115-001-0032	2021-06-21	2022-06-20
5	Impedance Stabilization Network	TESEQ	ISN T800	45130	2020-12-02	2021-12-01

3.1.2.Block Diagram of Test Setup



3.1.3.Test Standard

Power Line Conducted Emission Limits (Class B)

Frequency (MHz)			Limit (dBμV)	
			Quasi-peak Level	Average Level
0.15	~	0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50	~	5.00	56.0	46.0
5.00	~	30.00	60.0	50.0
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.				

3.1.4.EUT Configuration on Test

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

3.1.5.Operating Condition of EUT

3.1.5.1.Setup the EUT as shown on Section 3.1.2

3.1.5.2.Turn on the power of all equipments.

3.1.5.3.Let the EUT work in measuring Mode 1 and measure it.

3.1.6.Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC/ANSI C63.4-2014 on Conducted Emission Measurement.

The bandwidth of the test receiver is set at 9kHz.

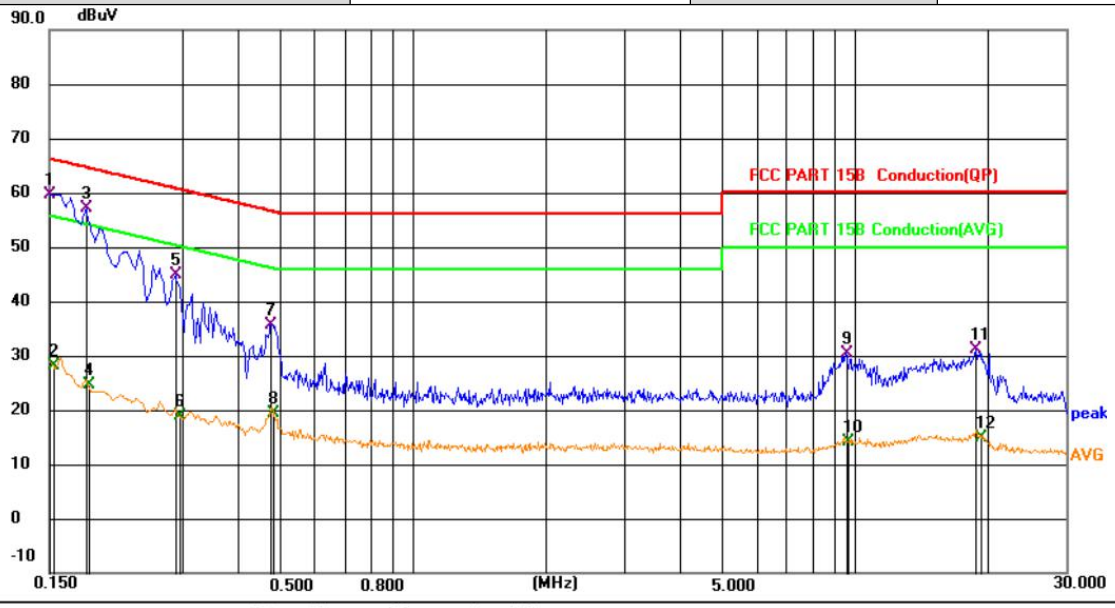
The frequency range from 150kHz to 30MHz is investigated

3.1.7.Test Results

PASS.

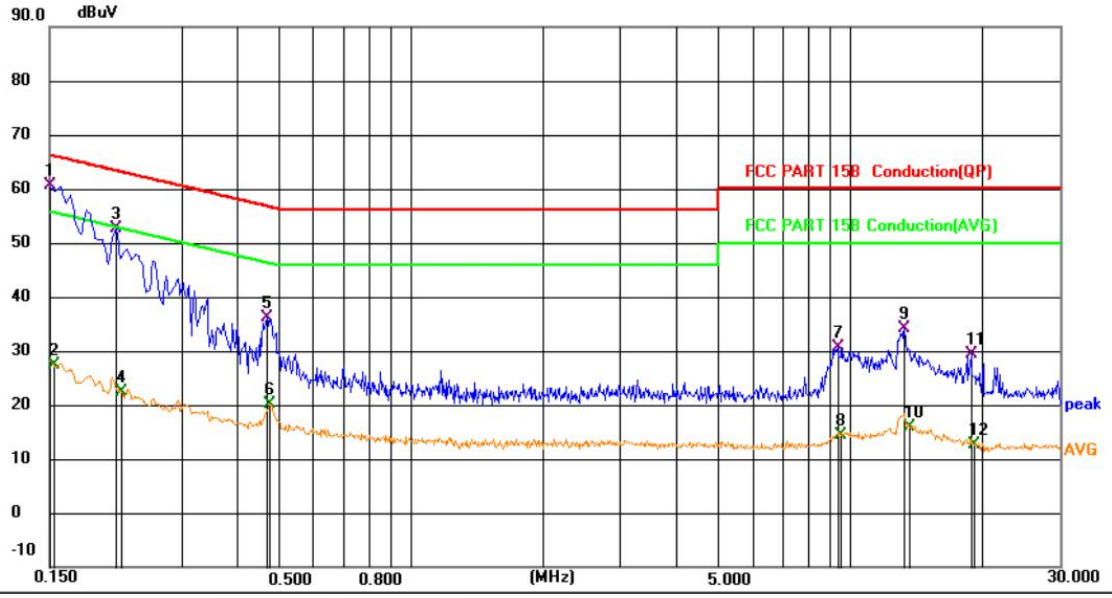
The test result please refer to the next page.

Test Model	T112	Test Mode	Mode 1
Environmental Conditions	23.3℃, 53.7% RH	Test Engineer	Bill Zhu
Pol	Line	Test Voltage	AC 120V/60Hz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	49.84	9.90	59.74	66.00	-6.26	QP	
2		0.1532	18.17	9.90	28.07	55.82	-27.75	AVG	
3		0.1816	47.21	9.90	57.11	64.41	-7.30	QP	
4		0.1835	14.84	9.90	24.74	54.33	-29.59	AVG	
5		0.2896	34.89	9.89	44.78	60.54	-15.76	QP	
6		0.2941	9.05	9.89	18.94	50.41	-31.47	AVG	
7		0.4786	25.68	9.91	35.59	56.36	-20.77	QP	
8		0.4837	9.40	9.91	19.31	46.28	-26.97	AVG	
9		9.5461	20.26	10.14	30.40	60.00	-29.60	QP	
10		9.6406	3.99	10.14	14.13	50.00	-35.87	AVG	
11		18.7711	20.18	10.95	31.13	60.00	-28.87	QP	
12		19.2436	4.00	10.97	14.97	50.00	-35.03	AVG	

Test Model	T112	Test Mode	Mode 1
Environmental Conditions	23.3℃, 53.7% RH	Test Engineer	Bill Zhu
Pol	Neutral	Test Voltage	AC 120V/60Hz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	50.66	9.90	60.56	66.00	-5.44	QP	
2		0.1532	17.58	9.90	27.48	55.82	-28.34	AVG	
3		0.2131	42.81	9.89	52.70	63.08	-10.38	QP	
4		0.2185	12.47	9.89	22.36	52.88	-30.52	AVG	
5		0.4696	26.26	9.90	36.16	56.52	-20.36	QP	
6		0.4786	10.27	9.90	20.17	46.36	-26.19	AVG	
7		9.3706	20.56	10.13	30.69	60.00	-29.31	QP	
8		9.5146	4.36	10.13	14.49	50.00	-35.51	AVG	
9		13.2901	23.81	10.41	34.22	60.00	-25.78	QP	
10		13.6321	5.34	10.44	15.78	50.00	-34.22	AVG	
11		18.9016	18.68	10.75	29.43	60.00	-30.57	QP	
12		19.1266	1.87	10.76	12.63	50.00	-37.37	AVG	

Note: Pre-Scan all mode, Thus record worse case mode result in this report.

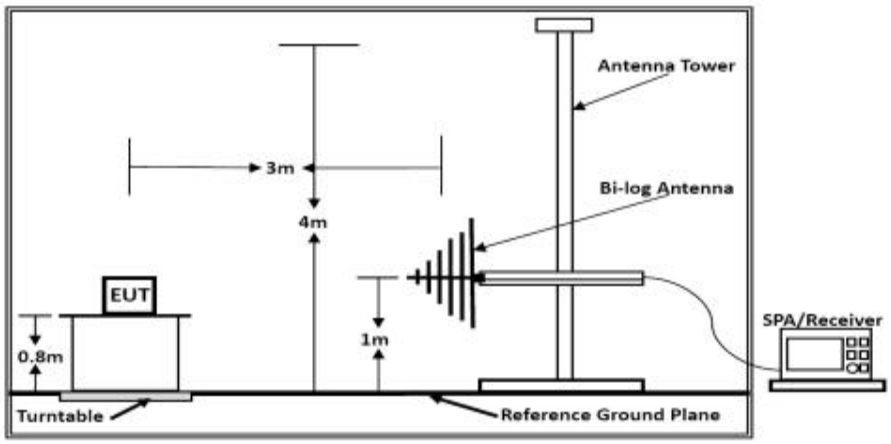
3.2. Radiated emission Measurement

3.2.1. Test Equipment

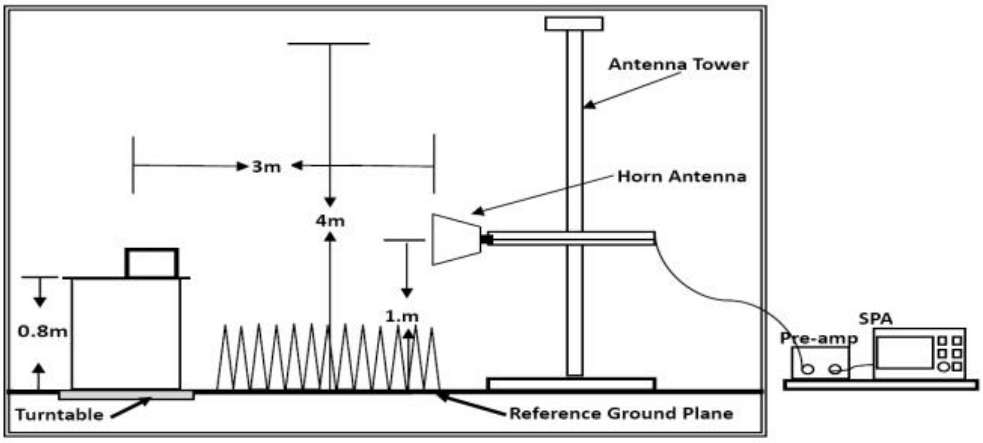
The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	AUDIX	E3	/	N/A	N/A
2	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-07-25	2024-07-24
3	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-07-01	2024-06-30
4	EMI Test Receiver	R&S	ESR 7	101181	2021-06-21	2022-06-20
5	Broadband Preamplifier	/	BP-01M18G	P190501	2021-06-21	2022-06-20

3.2.2. Block Diagram of Test Setup



Below 1GHz



Above 1GHz

3.2.3. Radiated Emission Limit (Class B)

Limits for Radiated Disturbance Below 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46
960 ~ 1000	3	500	54
Remark : (1) Emission level (dB)μV = 20 log Emission level μV/m (2) The smaller limit shall apply at the cross point between two frequency bands. (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.			

Limits for Radiated Emission Above 1GHz			
Frequency (MHz)	Distance (Meters)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)
Above 1000	3	74	54
***Note: The lower limit applies at the transition frequency.			

3.2.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.2.5. Operating Condition of EUT

3.2.5.1.Setup the EUT as shown in Section 3.2.2.
3.2.5.2.Let the EUT work in test Mode 1 and measure it.

3.2.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2014 on radiated emission measurement.

3.2.7. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB/VB 120kHz/1MHz for QP

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average

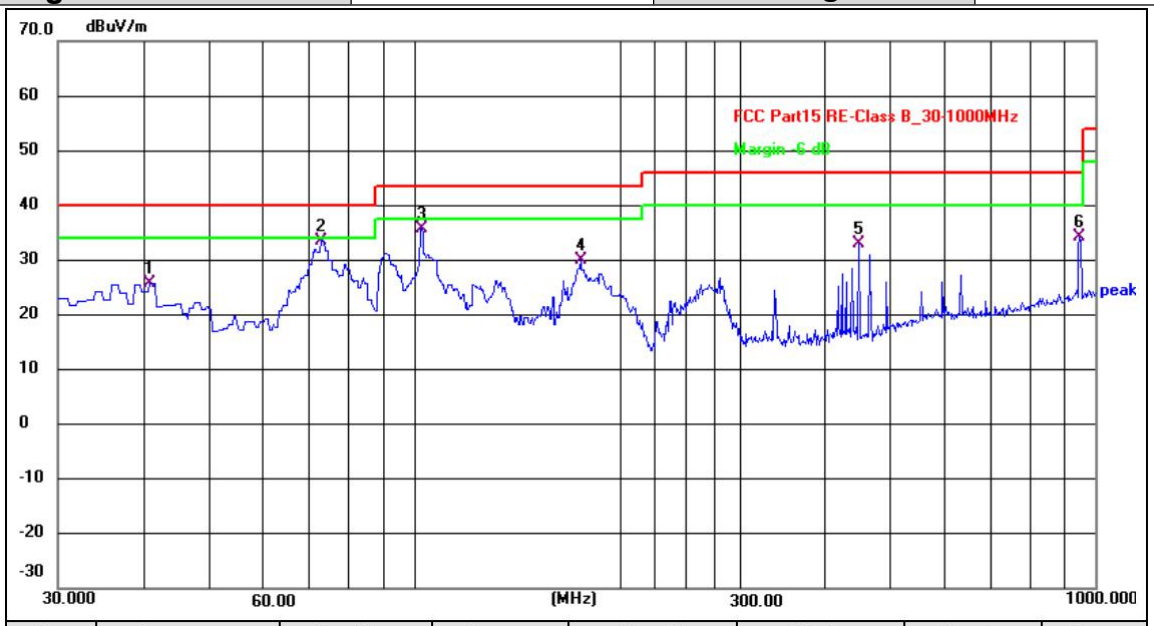
The frequency range from 30MHz to 1000MHz and above 1000MHz is checked.

3.2.8. Radiated Emission Noise Measurement Result

PASS.

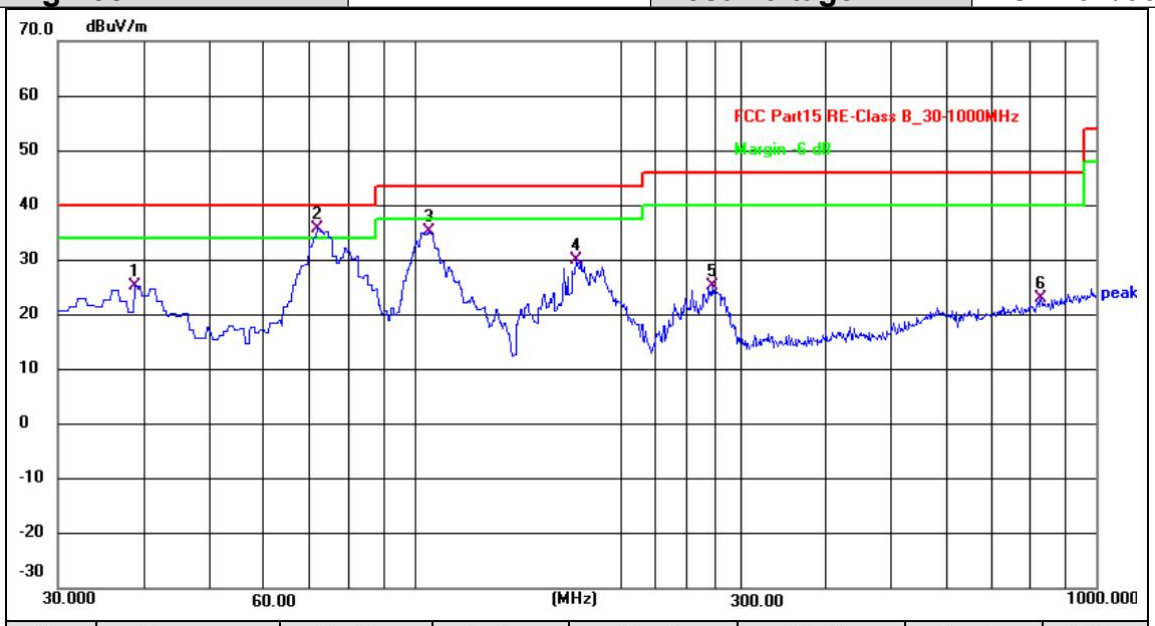
The scanning waveforms please refer to the next page.

Test Model	T112	Test Mode	Mode 1
Environmental Conditions	23.7℃, 52.1% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Bill Zhu	Test Voltage	AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	40.8446	56.00	-30.16	25.84	40.00	-14.16	QP
2 *	73.1025	64.27	-30.80	33.47	40.00	-6.53	QP
3	102.3597	63.15	-27.46	35.69	43.50	-7.81	QP
4	175.5000	60.74	-30.84	29.90	43.50	-13.60	QP
5	449.0400	58.78	-25.82	32.96	46.00	-13.04	QP
6	948.5900	52.62	-18.40	34.22	46.00	-11.78	QP

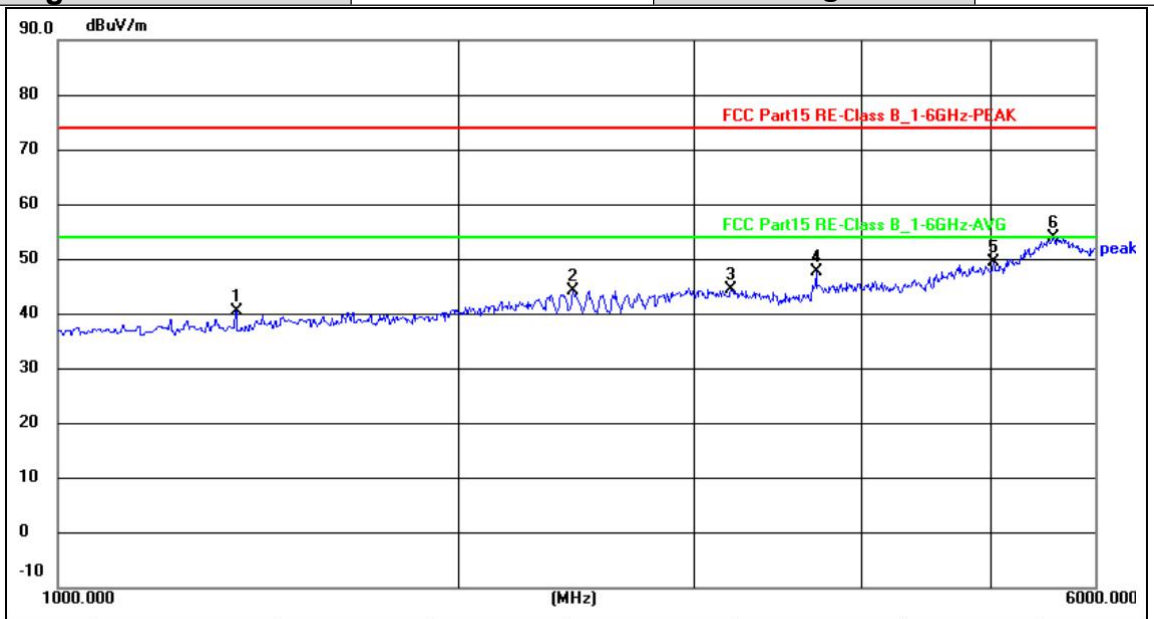
Test Model	T112	Test Mode	Mode 1
Environmental Conditions	23.7℃, 52.1% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Bill Zhu	Test Voltage	AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	38.8878	55.65	-30.29	25.36	40.00	-14.64	QP
2 *	72.0843	66.56	-30.86	35.70	40.00	-4.30	QP
3	104.6900	63.00	-27.70	35.30	43.50	-8.20	QP
4	172.5900	61.07	-31.01	30.06	43.50	-13.44	QP
5	272.5000	53.07	-27.79	25.28	46.00	-20.72	QP
6	829.2800	42.73	-19.72	23.01	46.00	-22.99	QP

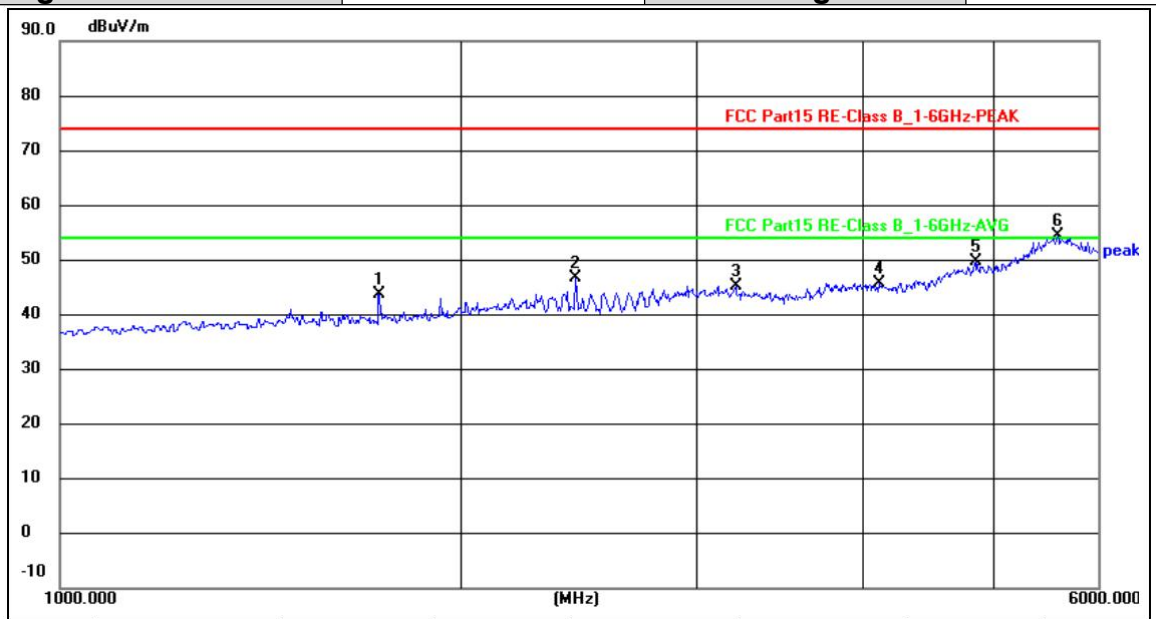
Note: 1. Pre-Scan all mode, Thus record worse case mode result in this report.

Test Model	T112	Test Mode	Mode 1 (Above 1GHz)
Environmental Conditions	23.6℃, 52.5% RH	Detector Function	Peak + AV
Pol	Vertical	Distance	3m
Test Engineer	Bill Zhu	Test Voltage	AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1360.000	55.53	-15.04	40.49	74.00	-33.51	peak
2	2435.000	54.53	-10.34	44.19	74.00	-29.81	peak
3	3195.000	52.54	-8.17	44.37	74.00	-29.63	peak
4	3705.000	55.26	-7.51	47.75	74.00	-26.25	peak
5	5025.000	52.78	-3.32	49.46	74.00	-24.54	peak
6 *	5585.000	54.15	-0.26	53.89	74.00	-20.11	peak

Test Model	T112	Test Mode	Mode 1 (Above 1GHz)
Environmental Conditions	23.6℃, 52.5% RH	Detector Function	Peak + AV
Pol	Horizontal	Distance	3m
Test Engineer	Bill Zhu	Test Voltage	AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1735.000	57.29	-13.61	43.68	74.00	-30.32	peak
2	2435.000	57.06	-10.34	46.72	74.00	-27.28	peak
3	3205.000	53.34	-8.16	45.18	74.00	-28.82	peak
4	4105.000	52.36	-6.64	45.72	74.00	-28.28	peak
5	4865.000	53.94	-4.30	49.64	74.00	-24.36	peak
6 *	5590.000	54.63	-0.28	54.35	74.00	-19.65	peak

Note: 1. Pre-Scan all mode, Thus record worse case mode result in this report.

4. TEST SETUP PHOTOGRAPHS

Please refer to separated files for Test Setup Photos of the EUT.

5. EXTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

6. INTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

----------THE END OF TEST REPORT----------